

# 61-58

## General

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## **A. General.**

Regulations 61-58 through 61-58.17 are promulgated pursuant to S.C. Code Sections 44-55-10 et seq. and are collectively known as the State Primary Drinking Water Regulations. The Department finds the standards and procedures prescribed are necessary to maintain reasonable standards of purity of the drinking water of the State consistent with the public health, safety, and welfare of its citizens.

## **B. Definitions.**

- (1) "Act" means the State Safe Drinking Water Act of 1976, and amendments.
- (2) "Action level" is the concentration of lead or copper in water specified in R.61-58.11.B(1), Lead and Copper Action Levels, which determines, in some cases, the treatment requirements contained in R.61-58.11, Control of Lead and Copper that a water system is required to complete.
- (3) "Administrator" means the Administrator of the United States Environmental Protection Agency.
- (4) "Annular space" means the space between the well casing and the formation or the space between the inner casing and outer casing where two casings are used.
- (5) "Aquifer" means a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of groundwater to wells and springs.
- (6) "Aquifer Storage and Recovery (ASR) Well" means a water well which allows potable water to be injected into a subsurface aquifer to be recovered by pumping at a later date.
- (7) "Artificial filter" means filter material which is placed in the annular space to increase the effective diameter of the well, and to prevent fine-grained sediments from entering the well.
- (8) "Backflow prevention device" means any device approved by the Department for use in preventing backflow under prescribed limited conditions of use.
- (9) "Bag filters" are pressure-driven separation devices that remove particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed of a non-rigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to outside.
- (10) "Bank filtration" is a water treatment process that uses a well to recover surface water that has naturally infiltrated into ground water through a river bed or bank(s). Infiltration is typically enhanced by the hydraulic gradient imposed by a nearby pumping water supply or other well(s).
- (11) "Bedrock" means the parent solid rock formation underlying weathered rock and soil.
- (12) "Best available technology" or "BAT" means the best technology, treatment techniques, or other means which either the Department or the Environmental Protection Agency (EPA) finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration).
- (13) "Board" means the South Carolina Board of Health and Environmental Control charged with responsibility for implementation of the Safe Drinking Water Act.

(14) "Boil Water Notice/Advisory" means a notice, whether written or verbal, issued by the Department, or the owner or operator of a public water system, notifying the users of the water system that the water is/may be contaminated and to boil the water (vigorous rolling boil for at least one minute) prior to using it for drinking or cooking. The notice shall give the reason for its issuance and corrective actions being taken.

(15) "Booster Pump" means any pump installed within a water distribution system for the purpose of increasing the water pressure in the water distribution system, including distribution storage facilities downstream from the pump. The term booster pump does not apply to the so called low service and high service pumps at water treatment plants.

(16) "Business Plan" for the purpose of these regulations means a document consisting of three sub-plans, a "Facilities Plan", a "Management Plan", and a "Financing Plan" which is intended to show how a water system will be self-sustaining and have the commitment and the financial, managerial and technical capability to consistently comply with the State Safe Drinking Water Act and these Regulations.

(17) "Cartridge filters" are pressure-driven separation devices that remove particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

(18) "Centralizer" means device to keep the casing and screen aligned in the center of the borehole to ensure proper emplacement of grout around the casing and artificial filter around the screens.

(19) "Certified Laboratory" means a laboratory approved by the Department under Regulation 61- 81.

(20) "Certified Tester" means any person holding an up-to-date backflow prevention assembly tester certification card issued by the Department. Certified testers fall into one of the following classifications:

(a) General Tester -any person who has successfully completed an approved backflow prevention training and certification course which is sponsored by or approved by the Department, and who has personal possession of or whose employer owns a backflow prevention assembly test kit. This person provides the service of testing backflow prevention assemblies to the general public.

(b) Inspector Tester -any person with the same qualifications as the General Tester, except the Inspector Tester must be employed by a municipality, water district, subdivision, or other public water system. The Inspector Tester is normally involved in the management of a backflow prevention program, and does not sell his services to the general public.

(c) Limited Tester -any person with the same qualifications as the General Tester except the prescribed test(s) is (are) conducted only on backflow prevention assemblies which are owned by his employer. The Limited Tester does not provide testing services to the general public.

(d) Manufacturer's Agent -any person with the same qualifications as the General Tester except the prescribed test(s) is (are) conducted as an extension of his duties as a representative of a particular backflow prevention company.

(21) "Certified Well Driller" means any person currently certified by the State Environmental Certification Board to practice as a well driller in South Carolina.

(22) "Clay" means fine-grained inorganic material (grains less than 0.0005 mm in diameter) which has very low permeability and is plastic.

(23) "Clean compliance history" is, for the purposes of R.61-58.17, a record of no MCL violations under R.61-58.5.F; no monitoring violations under R.61-58.5.G or R.61-58.17; and no coliform treatment technique trigger exceedances or treatment technique violations under R.61-58.17.

(24) "Coagulation" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

(25) "Coliform Bacteria" means all aerobic and facultative anaerobic, gram-negative, non-spore forming, rod-shaped bacteria which ferment lactose with gas formation within forty eight hours at thirty-five degrees Celsius.

(26) "Combined distribution system" is the interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

(27) "Commissioner" means the duly constituted Commissioner of the Department or his authorized agent.

(28) "Community Water Systems" means a public water system which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents. This may include, but not be limited to, subdivisions, municipalities, mobile home parks, apartments, etc.

(29) "Compliance cycle" means the nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle begins January 1, 1993 and ends December 31, 2001; the second begins January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

(30) "Compliance period" means a three-year calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001.

(31) "Comprehensive Performance Evaluation" (CPE) is a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with R.61-58.10.H and (I) the comprehensive performance evaluation must consist of at least the following components: assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

(32) "Cone of Depression" means the depression in the water table or potentiometric surface in an aquifer caused by pumping water from a well and usually having the shape of an inverted cone.

(33) "Confluent growth" means a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

(34) "Consecutive system" is a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

(35) "Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

(36) "Conventional filtration treatment" means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

(37) "Corrosion inhibitor" means a substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

(38) "Cross-connection" means any actual or potential connection or structural arrangement between a public water supply and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas or substance other than the intended potable water which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices and other temporary or permanent devices through which or because of which backflow can or may occur are considered to be cross-connections.

(39) "CT" or "CT<sub>calc</sub>" is the product of "residual disinfectant concentration" (C) in mg/L determined before or at the first customer, and the corresponding "disinfectant contact time (T) in minutes, i.e., "C" × "T". If a public water system applies disinfectants at more than one point prior to the first customer, it shall determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or "total inactivation ratio." In determining the total inactivation ratio, the public water system shall determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point(s). "CT<sub>99</sub>." is the CT value required for 99.9 percent (3-log) inactivation of *Giardia lamblia* cysts. CT<sub>99</sub>. for a variety of disinfectants and conditions appear in Tables 1.1 -1.6, 2.1, and 3.1 of R.61-58.10.F(2)(c).

$$\frac{CT_{calc}}{CT_{99.9}}$$

is the inactivation ratio. The sum of the inactivation ratios, or total inactivation ratio shown as

$$\sum \frac{(CT_{calc})}{(CT_{99.9})}$$

is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than 1.0 is assumed to provide a 3-log inactivation of *Giardia lamblia* cysts.

(40) "Dedicated Fire Line" means a water line connected to a public water system which is designed and used solely for a fire protection system. Such lines must be provided with an acceptable and approved backflow prevention device and must not connect at any point downstream of that device with water lines or fixtures that are used for potable water.

(41) "Department" means the South Carolina Department of Health and Environmental Control, including personnel thereof authorized and empowered by the Board to act on behalf of the Department or Board.

(42) "Development" means repairing damage to the aquifer caused by drilling procedures and increasing the porosity and permeability of the geologic materials surrounding the intake portion of the well.

(43) "Diatomaceous earth filtration" means a process resulting in substantial particulate removal in which (1) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and (2) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

(44) "Direct filtration" means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

(45) "Disinfectant" means any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms.

(46) "Disinfectant contact time" ("T" in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration ("C") is measured. Where only one "C" is measured, "T" is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or where residual disinfectant concentration ("C") is measured. Where more than one "C" is measured, "T" is (a) for the first measurement of "C", the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first "C" is measured and (b) for subsequent measurements of "C", the time in minutes that it takes for water to move from the previous "C" measurement point to the "C" measurement point for which the particular "T" is being calculated. Disinfectant contact time in pipelines shall be calculated based on "plug flow" by dividing the internal volume of the pipe by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs shall be determined by tracer studies or an equivalent demonstration.

(47) "Disinfected" means that the water is free of harmful or pathogenic organisms.

(48) "Disinfection" means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

(49) "Disinfection profile" is a summary of daily *Giardia lamblia* inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in R.61-58.10.H(3) (Disinfection profiling and bench marking) and in R.61-58.10.I(4) (Disinfection profile).

(50) "Dispensing Station" means a facility where additional treatment is provided to water from an approved public water system, and that treated water is available to the general public. This does not apply to point of use devices in public buildings (e.g., restaurants and cafeterias, etc.).

(51) "Distribution Treatment Plant" means any facility located within the distribution system capable of altering the physical, chemical, radiological or bacteriological quality of the water in a public water system (i.e. chlorine booster station).

(52) "Domestic or other non-distribution system plumbing problem" means a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken.

(53) "Dose equivalent" means the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRU).

(54) "Drawdown" means the difference in levels between the static water level in a well and the surface of the depressed water level that occurs when the well is pumped.

(55) "Drilling Fluid" means a water or air based fluid used in drilling to remove cuttings from the hole, to clean and cool the drill bit, to reduce friction between the drill pipe and the sides of the hole and to seal the bore hole.

(56) "Dry Line" means a water line project not connected to a source at the time application is made for the permit to construct.

(57) "Dual sample set" is a set of two samples collected at the same time and same location, with one sample analyzed for TTHM and the other sample analyzed for HAA5. Dual sample sets are collected for the purposes of conducting an IDSE under subpart U of this part and determining compliance with the TTHM and HAA5 MCLs under subpart V of this part.

(58) "Dug well" means large diameter (24 to 60-inch) well generally of low yield which is usually excavated by hand and which penetrates only a few feet below the water table.

(59) "Effective corrosion inhibitor residual" for the purpose of R.61-58.11, Control of Lead and Copper, means a concentration sufficient to form a passivating film on the interior walls of a pipe.

(60) "Effective (grain) size" means the sieve size that retains 90 percent of the materials.

(61) "Emergency" means any event which adversely impacts the ability of the system to produce or deliver safe drinking water to the consumer.

(62) "Emergency Well" means a well that is operable and connected to the distribution system, but is not routinely operated or sampled. Such wells are only available to be used during emergency situations and only in conjunction with a boil water advisory.

(63) "Enhanced coagulation" means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

(64) "Enhanced softening" means the improved removal of disinfection byproduct precursors by precipitative softening.

(65) "Expansion" means installation of additions, extensions, changes, or alterations to a public water system's existing source, transmission, storage or distribution facilities which will enable the system to increase in size its existing service area and/or number of authorized service connections.

(66) "Facilities Plan" means a document which consists of an assessment of the current and foreseeable water supply needs of a water system's service area; a detailed description of alternatives considered for meeting those needs; detailed cost estimates for the construction, operation and maintenance of the different alternatives, and the rationale for the alternative selected. For existing systems, the description of alternatives would include but not be limited to: a detailed description of existing facilities (source, treatment and distribution); description of any upgrade necessary to bring the existing facilities into compliance with the Act and these regulations; an assessment of the ability of the existing facilities, along with any necessary upgrade, to supply the current and foreseeable water supply needs of the area (including the ability to comply with any foreseeable regulatory changes); and a description of any other alternatives considered for meeting the water supply needs.

(67) "Federal Act" means the Federal Safe Drinking Water Act, as amended.

(68) "Filter profile" is a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

(69) "Filtration" means a process for removing particulate matter from water by passage through porous media.

(70) "Financial Plan" means a document which consists of projections that a water system's revenues and cash flow will be sufficient for meeting the cost of construction, operation and maintenance for at least five full years from the initiation of operations. The financial plan must also include assurances deemed necessary for the system to remain viable. Such assurances may include but not be limited to: 1) a projection of rates showing a significant coverage ratio, 2) escrow funds, 3) bonding and 4) letter of credit.

(71) "Finished water" is water that is introduced into the distribution system of a public water system and is intended for distribution and consumption without further treatment, except as treatment necessary to maintain water quality in the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

(72) "Fire Flow" means five hundred (500) gallons per minute or the flow required for fire protection by the local government or public water system, whichever is greater.

(73) "First draw sample" means a one-liter sample of tap water, collected in accordance with R.61-58.11(H)(2), Sample Collection Methods, that has been standing in plumbing pipes at least 6 hours and is collected without flushing the tap.

(74) "Flocculation" means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

(75) "Flowing stream" is a course of running water flowing in a definite channel.

(76) "Formation" means any substantial interval penetrated during the drilling of a well in which the geologic materials have distinct compositional characteristics with respect to adjacent overlying and underlying intervals.

(77) "Fracture Zone" means any level or interval penetrated during drilling which has void spaces caused by breakage of the formation.

(78) "GAC10" means granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days, except that the reactivation frequency for GAC10 used as a best available technology for compliance with R.61-58.5.P(2)(b) MCLs shall be 120 days.

(79) "GAC20" means granular activated carbon filter beds with an empty-bed contact time of 20 minutes based on average daily flow and a carbon reactivation frequency of every 240 days.

(80) "Geologic Material" means naturally occurring matter derived from or consisting of rock and sediment.



(81) "Geophysical logging" means any number of techniques that measure some electrical, chemical or radioactive property of the subsurface, either characteristic of the ground water or of the rocks in which the ground water occurs.

(82) "Gross alpha particle activity" means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

(83) "Gross beta particle activity" means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

(84) "Groundwater" means subsurface water found in void spaces in geologic materials within the zone of saturation.

(85) "Groundwater Treatment Plant" means any facility capable of altering the physical, chemical, radiological or bacteriological quality of groundwater for public consumption in a public water system.

(86) "Ground water under the direct influence of surface water (GWUDI)" means any water beneath the surface of the ground with (1) significant occurrence of insects or other microorganisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or (2) *Cryptosporidium*, or (3) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence shall be determined for individual sources in accordance with criteria established by the Department. The Department's determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

(87) "Grout" means a fluid mixture of cement and water (neat cement) of a consistency that can be forced through a pipe and placed as required. Various additives, such as sand, bentonite, and hydrated lime, may be included in the mixture to meet certain requirements. For example, sand is added when a considerable volume of grout is needed.

(88) "Haloacetic acids (five)" (HAA5) mean the sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition.

(89) "Halogen" means one of the chemical elements chlorine, bromine or iodine.

(90) "Hardpan" means hard impervious layer cemented by relatively insoluble secondary material.

(91) "High Rate Gravity Filter" means any gravity filter which filters water at a rate in excess of four (4) gallons per minute per square foot.

(92) "Initial compliance period" means the first full three-year compliance period which begins at least 18 months after promulgation, except for contaminants listed at R.61-58.5.B(2)(l)-(p) and those listed at R.61-58.5.D(2)(b)(xix)-(xxxiii) and R.61-58.5.N(2)(s)-(u), initial compliance period means the first full three-year compliance period after promulgation for systems with 150 or more service connections (January 1993-December 1995), and first full three-year compliance period after the effective date of the regulation (January 1996-December 1998) for systems having fewer than 150 service connections.

(93) "Lake/reservoir" refers to a natural or man made basin or hollow on the Earth's surface in which water collects or is stored that may or may not have a current or single direction of flow.

(94) "Large water system" for the purpose of R.61-58.11, Control of Lead and Copper, only, means a water system that serves more than 50,000 persons.

(95) "Lead free" means: (i) when used with respect to solders and flux, those containing not more than 0.2 percent lead; and (ii) when used with respect to pipes and pipe fittings, those containing not more than 8.0 percent lead.

(96) "Lead service line" means a service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck or other fitting which is connected to such lead line.

(97) "Legionella" means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

(98) "Level 1 assessment" is an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment. It is conducted by the system operator or owner. Minimum elements include review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality (including water storage); source and treatment considerations that bear on distributed water quality, where appropriate (e.g., whether a ground water system is disinfected); existing water quality monitoring data; and inadequacies in sample sites, sampling protocol, and sample processing. The system must conduct the assessment consistent with any Department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type, and characteristics of the distribution system.

(99) "Level 2 assessment" is an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment. A Level 2 assessment provides a more detailed examination of the system (including the system's monitoring and operational practices) than does a Level 1 assessment through the use of more comprehensive investigation and review of available information, additional internal and external resources, and other relevant practices. It is conducted by an individual approved by the Department, which may include the system operator. Minimum elements include review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality (including water storage); source and treatment considerations that bear on distributed water quality, where appropriate (e.g., whether a ground water system is disinfected); existing water quality monitoring data; and inadequacies in sample sites, sampling protocol, and sample processing. The system must conduct the assessment consistent with any Department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type, and characteristics of the distribution system. The system must comply with any expedited actions or additional actions required by the Department in the case of an E. coli MCL violation.

(100) "Limestone" means a sedimentary formation composed chiefly of calcium carbonate, consolidated or unconsolidated, which may be in the form of shell pieces or calcareous muds or sands.

(101) "Locational running annual average (LRAA)" is the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

(102) "Man-made beta particle and photon emitters" means all radionuclides emitting beta particles and/or photons listed in Maximum Permissible Body Burdens and Maximum Permissible Concentration of

Radionuclides in Air or Water for Occupational Exposure, NBS Handbook 69, except the daughter products of thorium-232, uranium-235, and uranium-238.

(103) "Management Plan" means a document which consists of the identification of a water system's owner; description of the management structure; an organizational chart; staffing requirements and duties; identification of any outside services and a copy of any service agreements; a copy of the system's operation and maintenance procedures required by R.61-58.7.B; and a detailed estimate of costs for the operation and maintenance of the system as it relates to the management plan, unless included in the cost estimate for the facilities plan.

(104) "Marl" means calcareous clay. In South Carolina, the term is mostly applied to the Cooper Marl or Eocene Age, characterized by its dark greenish drab to grayish green color.

(105) "Maximum contaminant level" means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

(106) "Maximum residual disinfectant level" (MRDL) means a level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a PWS is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a PWS is in compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels under Section 1412 of the Safe Drinking Water Act. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants. Notwithstanding the MRDLs listed in R.61-58.5.Q, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.

(107) "Maximum residual disinfectant level goal" (MRDLG) means the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants.

(108) "Maximum Total Trihalomethane Potential" means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven days at a temperature of 25°C or above.

(109) "Mechanical logging" means any number of techniques that measure some physical property of the subsurface.

(110) "Medium-size water system" for the purpose of R.61-58.11, Control of Lead and Copper, only, means a water system that serves greater than 3,300 and less than or equal to 50,000 persons.

(111) "Membrane filtration" is a pressure or vacuum driven separation process in which particulate matter larger than 1 micrometer is rejected by an engineered barrier, primarily through a size- exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test. This definition includes the common membrane technologies of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

(112) "National Primary Drinking Water Regulations" means primary drinking water regulations promulgated by the Administrator pursuant to the Federal Act and contained in 40 CFR Part 141, as amended.

(113) "Natural filter" means the material adjacent to the screens in Type II wells which is part of the screened formation and which is relatively free of fine-grained material as a result of well development.

(114) "National Secondary Drinking Water Regulations" means secondary drinking water regulations promulgated by the Administrator pursuant to the Federal Act, and contained in 40 CFR Part 143, as amended.

(115) "Near the first service connection" means at one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

(116) "Non-caving formation" means formation which will not collapse into an open borehole drilled through it such as igneous and metamorphic crystalline rocks, limestone, tight clay, etc.

(117) "Non-coliform growth (NCG)" means any bacterial growth other than coliform type which appears in a membrane filter test for coliform bacteria.

(118) "Non-community water system" means a public water system which serves at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days out of the year, and does not meet the definition of a community water system.

(119) "Non-transient non-community water system" means a public water system that is not a community water system and that regularly serves at least twenty-five (25) of the same persons over six months per year.

(120) "Operator" means a person certified by the South Carolina Environmental Certification Board as being qualified to operate and maintain a public water system. Operation and maintenance responsibilities shall include, but not be limited to, conducting tests of the raw and treated water, adjusting chemical feed rates, and/or operating equipment so as to change the physical, chemical, radiological or bacteriological quality of surface or ground water to meet established standards.

(121) "Optimal corrosion control treatment" for the purpose of R.61-58.11, Control of Lead and Copper, only, means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations.

(122) "Penetration rate log" means tabulation of the time required to drill unit depth intervals such as minutes per foot, minutes per 5-feet, minutes per drill rod section, etc.

(123) "Performance evaluation sample" means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the Department. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.

(124) "Person" means an individual, partnership, co-partnership, cooperative, firm, company, public or private corporation, political subdivision, agency of the State, trust, estate, joint structure company or any other legal entity or their legal representative, agent or assigns.

(125) "Picocurie (pCi)" means that quantity of radioactive material producing 2.22 nuclear transformations per minute.

(126) "Plant intake" refers to the works or structures at the head of a conduit through which water is diverted from a source (e.g., river or lake) into the treatment plant.

(127) "Point of disinfectant application" is the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff.

(128) "Point-of-entry treatment device (POE)" is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

(129) "Point-of-use treatment device (POU)" is a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap

(130) "Pollution Source" means a facility or activity which may introduce any dangerous material to the groundwater system below the water table in concentrations sufficient to cause drinking water quality standards to be exceeded or to decrease the quality of the drinking water. pollution sources shall include, but not be limited to, the following:

- a. Septic tank
- b. Tile Field
- c. Sewer line
- d. Abandoned unprotected well
- e. Waste treatment lagoon
- f. Storage lagoon
- g. Animal feedlot
- h. Chemical handling area
- i. Chemical storage area
- j. Petroleum storage area
- k. Waste disposal area
- l. Mine

(131) "Presedimentation" is a preliminary treatment process used to remove gravel, sand and other particulate material from the source water through settling before the water enters the primary clarification and filtration processes in a treatment plant. May be with or without chemical addition.

(132) "Primary Drinking Water Regulation" means the maximum contaminant limits, the requirements for monitoring, the requirements for reporting, record retention requirements and public notification specified in R.61-58.5, Maximum Contaminants in Drinking Water, and R.61-58.6, Reports, Record Retention and Public Notification of Drinking Water Violations.

(133) "Professional Engineer" means a person properly qualified to perform engineering work as provided in Title 40 of the 1976 Code of Laws of South Carolina, as amended, Chapter 22, Engineers and Land Surveyors.

(134) "Professional Geologist" means a person registered as a professional geologist by the South Carolina State Board of Registration for Geologists.

(135) "Public Water System" means (1) any public or privately owned waterworks system which provides drinking water, whether bottled or piped, for human consumption, including the source of supply whether the source of supply is of surface or subsurface origin; (2) all structures and appurtenances used for the collection, treatment, storage or distribution of drinking water delivered to consumers; (3) any part or portion of the system and including any water treatment facility which in any way alters the physical, chemical, radiological, or bacteriological characteristics of drinking water; provided, that public water system shall not include a drinking water system serving a single private residence or dwelling. A separately owned system with its source of supply from another waterworks system shall be a separate public water system.

(136) "Rapid Mix" means the rapid dispersion of chemicals throughout the water to be treated, usually by violent agitation.

(137) "Rapid Rate Gravity Filter" means a gravity filter not to exceed 4 gallons per minute per square foot of surface area.

(138) "Raw water" means untreated water as obtained from the source.

(139) "Rem" means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A "millirem (mrem)" is one one-thousandth of a rem.

(140) "Repeat compliance period" means any subsequent compliance period after the initial compliance period.

(141) "Residual disinfectant concentration" ("C" in CT calculations) means the concentration of disinfectant measured in mg/L in a representative sample of water.

(142) "Sand" means a detrital geologic material in the form of un-cemented particles having a size range from two (2) millimeters to one-sixteenth ( 1/16) of a millimeter and composed of mineral crystals or rock fragments.

(143) "Sanitary defect" is a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.

(144) "Sanitary Seal" means a cap on the top of the well casing usually fitted with a rubber expansion gasket, which seals off surface drainage, thereby protecting the well from contamination directly down the casing.

(145) "Seasonal system" is a non-community water system that is not operated as a public water system on a year-round basis and starts up and shuts down at the beginning and end of each operating season.

(146) "Secondary Containment" means a basin constructed to receive the liquids spilled from any chemical storage tank or solution tank, and shall be designed to prevent migration of any accumulated liquid out of the basin to the soil, ground-water, or surface water at any time. The volume of the secondary containment shall equal or exceed the volume of the tank. Where more than one (1) tank is located in the secondary containment area, the volume of the secondary containment shall be equal to or greater than the volume of the largest tank.

(147) "Secondary maximum contaminant level" means the maximum contaminant levels which, in the judgment of the Department, are requisite to protect the public welfare. Such levels may apply to any contaminant in drinking water (1) which may adversely affect the odor or appearance of such water and consequently may cause a substantial number of the persons served by the public water system providing such water to discontinue its use, or (2) which may otherwise adversely affect the public welfare. Such levels may vary according to geographic and other circumstances.

(148) "Sedimentation" means a process for removal of solids before filtration by gravity or separation.

(149) "Service line sample" means a one-liter sample of water, collected in accordance with R.61-58.11.H(2)(c), Sample Collection Methods, that has been standing for at least 6 hours in a service line.

(150) "7Q10" means the minimum average annual stream flow that can statistically be expected to occur for a seven day period once every ten years.

(151) "Sieve analysis" means a method of determining grain-size distribution by mechanically separating the various size portions using a set of graduated sieves and weighing the portion of the sample retained on each sieve. These weights are converted to percent retained and graphically plotted against grain size to show the grain size distribution in a well.

(152) "Single family structure" for the purpose of R.61-58.11, Control of Lead and Copper, only, means a building constructed as a single-family residence that is currently used as either a residence or a place of business.

(153) "Slow sand filtration" means a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h) resulting in substantial particulate removal by physical and biological mechanisms.

(154) "Small water system" for the purpose of R.61-58.11, Control of Lead and Copper, only, means a water system that serves 3,300 persons or fewer.

(155) "Specific Capacity" means the rate of well yield per unit of drawdown. It is usually expressed as gallons-per-minute per foot of drawdown and is a required measurement in selecting pump setting and size.

(156) "Stabilized Water" means water which has been physically or chemically altered to reduce its aggressiveness or corrosiveness.

(157) "Stand-by Well" means a well that is not routinely used , but which can be immediately placed into operation if needed. Such wells are routinely exercised and sampled by the water system to ensure operability and water quality.

(158) "Standard sample" means the aliquot of finished drinking water that is examined for the presence of coliform bacteria.

(159) "State Water System" or SWS means any water system that serves less than fifteen (15) service connections or regularly serves an average of less than twenty-five (25) individuals daily.

(160) "Static water level" means the stable water level which has not been affected by pumping the well in which it is measured.

(161) "Subpart H systems" means public water systems using surface water or ground water under the direct influence of surface water as a source that are subject to the requirements of 40 CFR 141, subpart H.

(162) "Supplier of water" means any person who owns or operates a public water system.

(163) "Surface water" means all water which is open to the atmosphere and subject to surface runoff.

(164) "Surface Water Treatment Plant" means any facility capable of altering the physical, chemical, radiological or bacteriological quality of surface water to produce water for public consumption in a public water system.

(165) "SUVA" means Specific Ultraviolet Absorption at 254 nanometers (nm), an indicator of the humic content of a water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm ( $UV_{254}$ ) (in  $m^{-1}$ ) by its concentration of dissolved organic carbon (DOC) (in mg/L).

(166) "System with a single service connection" means a system which supplies drinking water to consumers via a single service line.

(167) "Tap" means a service connection, the point at which water is delivered to the consumer (building, dwelling, commercial establishment, camping space, industry, etc.) from a distribution system, whether metered or not and regardless of whether there is a user charge for consumption of the water.

(168) "Too numerous to count" means that the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

(169) "Total Organic Carbon" (TOC) means total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures.

(170) "Total Trihalomethanes" means the sum of the concentration in milligrams per liter of the trihalomethane compounds [trichloromethane (chloroform), dibromochloromethane, bromodichloromethane, tribromomethane (bromoform)], rounded to two significant figures.

(171) "Transient non-community water system" or TWS means a non-community water system that does not regularly serve at least 25 of the same persons over six months per year.



(172) "Tremie pipe" means a device, usually a small diameter pipe, that carries grouting materials to the bottom of the zone to be grouted and which allows pressure grouting from the bottom up without introduction of appreciable air pockets.

(173) "Trihalomethane" means one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

(174) "Two-stage lime softening" is a process in which chemical addition and hardness precipitation occur in each of two distinct unit clarification processes in series prior to filtration.

(175) "Uncovered finished water storage facility" is a tank, reservoir, or other facility used to store water that will undergo no further treatment to reduce microbial pathogens except residual disinfection and is directly open to the atmosphere.

(176) "Uniformity coefficient" means the ratio of the sieve size that will retain 40 percent of the aquifer materials to the effective size.

(177) "Viable Water System" means a water system which is self-sustaining and has the commitment and the financial, managerial and technical capability to consistently comply with the State Safe Drinking Water Act (44-55-10 et seq.) and these regulations.

(178) "Virus" means a virus of fecal origin which is infectious to humans by waterborne transmission.

(179) "Vending Machine" means any self-service device which upon insertion of a coin, coins, or token, or upon receipt of payment by other means, dispenses unit servings of water in bulk, without the necessity of refilling the machine between each operation.

(180) "Waterborne disease outbreak" means the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the Department.

(181) "Well" means a bored, drilled or driven shaft, or a dug hole whose depth is greater than the largest surface dimension, from which water is extracted or injected. This shall include, but not be limited to, wells used for water supply for irrigation, industrial or manufacturing processes or drinking water; wells used for underground injection of waste for disposal, storage, or drainage disposal; wells used in mineral or geothermal recovery, and any other special process well. In South Carolina, wells used for public water supplies fall into one of the following types of construction:

- a. Type I -open hole wells into bedrock aquifers.
- b. Type II -screened, natural filter wells into unconsolidated aquifers.
- c. Type III -screened, artificial filter (gravel pack) wells into unconsolidated aquifers.
- d. Type IV -open hole wells into limestone aquifers.

(182) "Well Casing" means tubular retaining structure, generally metal, which is installed in the excavated hole to maintain the well opening.

(183) "Well interference" means the additive drawdown effects to two or more wells pumping from the same aquifer in the same vicinity.

(184) "Wholesale system" is a public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

### **C.Appeals.**

Any determination made by the Department pursuant to these regulations shall be subject to the provisions of R.61-72 and the Administrative Procedures Act.

### **D.Severability.**

Should any section, paragraph or other part of these regulations be declared invalid for any reason, the remainder shall not be affected.

### **E.Violations and Penalties.**

Any person or persons violating these regulations shall be subject to the penalties provided in Section 44-55-90, of the 1976 Code of Laws, as amended.